

VOLFENZON, L. G.

"The resistance of tissues of some hibernating and non-hibernating rodents to cooling and supercooling."

UNESCO - International Symposium on the Role of Cell Reactions in Adaptations of Metazoa to Environmental Temperature.

Leningrad, USSR, 31 May - 5 June 1963

VOL'FENSON, L.G.; STUDITSKIY, A.N., nauchnyy redaktor

[General histology] Obshchaya gistologiya. Nauch. red. A.N. Studitskiy.  
Moskva, 1955. 27 plates.  
(HISTOLOGY--ATLASSES)

(MLRA 9:7)

VOL'PENZON, L.G.

Paraneurotic effect of local anesthetics on cellular elements of  
various tissues. Zhur.ob.biol. 15 no.3:220-224 My-Je '54.  
(MLRA 7:6)

(ANESTHETICS, LOCAL, effects,  
\*on tissue of various organs in vitro)

VOL'YENZON, L.G.

Changes in the size of nuclei in mesothelial and mast cells due  
to the effect of novocaine. TSitologiya 1 no.6:641-648 N-D '59. (MIRA 13:4)

1. Laboratoriya kletochnykh adaptatsiy Instituta tsitologii AN  
SSSR, Leningrad.

(CELL NUCLEI)

(NOVOCAINE)

"APPROVED FOR RELEASE: 03/14/2001

CIA-RDP86-00513R001860430003-6

SECRET

APPROVED FOR RELEASE: 03/14/2001

CIA-RDP86-00513R001860430003-6"

KIKNADZE, G.G., inzh.; VOL'FENZON, M.M., inzh.

Pedestrian tunnel at Stantsiya Didube. Transp. stroi. 15 no.5:20-21  
My '65. (MIRA 18:7)

GOLUBEV, N.V.; VOL'FENSON, M.N.

Development of the power plants of Soviet-built seagoing  
transport ships; Sudostroenie no. 11:31-34 N '65  
(MIRA 19:1)

VOL'FENZON, M.N., inzhener.

Diesel electric plant of the loose bulk load freighter, "Dneproges"  
and the refrigerator vessel "Aktiubinsk." Sudostroenie 23 no.4:11-18  
Ap '57. (MLRA 10:5)  
(Dneproges (ship)) (Aktiubinsk (ship))



VOL'JENZON, M.N., inzh.

Steam turbine plant on the tanker "Peking." Sudostroenie 26  
no.8:23-30 Ag '60. (MIRA 13:10)  
(Steam turbines) (Marine engineering)

AVAKYAN, A.S.; VOL'FETAG, D.B.,

Review of power engineering in Switzerland. Energokhoz. za rub.  
no.1:1-2 Ja-F '57.

(RER 12:10)

(Switzerland--Power engineering)

YOLUTER, L. P.

Survey of power production in Spain. Energetika, za rub. 1957:1-2  
Jl-Ag '57. (MIA 18:11)  
(Spain--Electric power production)

VOL'FENION, L.G.

Effect of glycerol on the survival time of ciliated epithelium  
of the rat trachea during cooling and supercooling. *Embriologia*  
5 no.3:326-328 My-Je '63. (BIRM 17:5)

1. Laboratoriya kosmicheskoy biologii Instituta A. I. L'vovskogo AN  
SSSR, Leningrad.

L 36730-65 EPF(c). EPF(n)-2/ETR/TWC(j). STA's'-2/STA'n)/RWP(j). EWT(1)/EWT(m)

ACCESSION NR: AT500 893

0 000 84/000/000 0047/0055

AUTHOR: Vol'f-Epshteyn, A. B.; Karavayev, G. N.; Krichko, A. N.; Medzhibovskiy, B. A.

TITLE: An organic heat-transfer agent for nuclear reactors based on the by-products of cumene production

SOURCE: Moscow, Institut atomnoy energii. Issledovaniya po primeneniyu organicheskikh teplonositeley-zamedlителей v energeticheskikh reaktorakh (Research on the use of organic heat-transfer agents and moderators in nuclear reactors). Moscow, Atomizdat, 1984, 12-65

TOPIC TAGS: organic reactor coolant, <sup>19</sup> thermal reactor, radiation polymerization, <sup>9</sup> power reactor, infrared spectra, heat transfer agent, cumene production, polyalkylbenzene resin, biphenyl, solvent, liquid, polymerization

ABSTRACT: The authors investigated the possibility of obtaining an organic heat-transfer agent whose radiolysis products could be comparable to those of monoisopropylphenyls from the by-products of polyalkylbenzene formation. It is shown that a polyalkylbenzene resin can be used as a heat-transfer agent. The radiolysis products of the chemical composition of the resin are compared with those of monoisopropylphenyls.

Card 1/2

L 36730-65

ACCESSION NR: AT5007898

the resin are derivatives of biphenyl and biphenylalkanes. The boiling point of the resin was 310 - 365C for fractions obtained at 200 - 300C. Hydrogenation was carried out in the presence of an Al-Ni-Mo catalyst under a hydrogen pressure of 30 - 80 kg/cm<sup>2</sup> at 350 - 400C. The decomposition rate of the heat-transfer agent was measured within  $\pm 2\%$ ,  $\pm 0.5\%$ , and  $\pm 1\%$ , respectively. The decomposition rate of the heat-transfer agent under the action of the catalyst at different temperatures was examined in a temperature range of 200 - 400C. Each test lasted from 20 - 22 hrs. The authors found that the decomposition rate of the heat-transfer agent in the presence of the catalyst is significantly higher than in the absence of the catalyst. The transition from biphenyl to biphenylalkanes is observed. The activity of this coolant is no different from that of the other fluids investigated. Orig. art. has: 8 figures, 1 table and 1 formula.

ASSOCIATION: Institut atomnoy energii, Moscow (Institute of Atomic Energy)

SUBMITTED: 01Aug64

ENCL: 00

SUB CODE: NP, OC

NO REF SOV: 000

OTHER: 000

Card 2/2

16.3500

34761

S/140/62/000/001/002/011  
C111/C444

AUTHOR: Vol'fersdorf, L.

TITLE: On the singular elliptic Neumann problem for the Tricomi equation  
Dedicated to the memory of Professor F. J. Frankl'

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Matematika, no. 1, 1962, 14-19

TEXT: Considered is the problem N

$$\Psi_{xx} + \Psi_{yy} + \frac{1}{3y} \Psi_y = 0 \quad (2)$$

$$\Psi_n(t) = f(t) \text{ on } L \quad (3a)$$

$$\Psi_\eta(x) = v(x) \text{ on } \overline{AB} \quad (3b)$$

where A and B are the points -1 and +1 of the x-axis, (2) is obtained out of

$$\eta \Psi_{xx} + \Psi_{\eta\eta} = 0 \quad (1)$$

Card 1/4

On the singular elliptic Neumann ...

S/140/62/000/001/002/011  
C111/C444

by the substitution  $y = \frac{2}{3} \eta^{3/2}$ ,  $L$  connects the points  $A$  and  $B$  in the upper half plane  $xy$ ,  $L$  does not touch the  $x$ -axis in  $A$  and  $B$ ,  $n$  indicates the inner normal, the inclination angle  $\theta$  of the tangent of  $L$  satisfies the Hölder condition and in the neighborhood of  $A$  and  $B$  the following conditions

$$|f(t)| \leq \text{const } v^{-\alpha}, \quad \alpha < \frac{4}{3} \quad (t = u + iv \in L) \quad (4a)$$

$$|v(x)| \leq \text{const } |x \pm 1|^{-\beta}, \quad \beta < 1 \quad (4b)$$

are satisfied. One puts  $\psi = \psi^I + \psi^{II}$ , and the problem  $N$  is reduced to the following two problems

$$\psi_{\eta}^I = v(x) \text{ on } AB \quad (\text{problem } N^I), \quad (7a)$$

$$\psi_{\eta}^{II} = 0 \text{ on } \overline{AB}, \quad \psi_n^{II} = f(t) - \psi_n^I(t) = g(t) \text{ on } L \quad (\text{problem } N^{II}) \quad (7b)$$

Card 2/4



On the singular elliptic Neumann ...

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The solution of the original problem N is then, except for an additive constant, given by the sum of

$$\Psi^I(z) = \alpha_3 \int_{-1}^1 v(\xi) |z - \xi|^{-1/3} d\xi \quad (10)$$

where

$$\alpha_3 = - \frac{\Gamma(1/6)}{2^{2/3} 3^{1/3} \pi^{1/2} \Gamma(2/3)}$$

and of

$$\Psi^{II}(z) = E \int_L v^{1/3} \mu(t) |z - \bar{t}|^{-1/3} F\left(\frac{1}{6}, \frac{1}{6}, \frac{1}{3}, z\right) ds \quad (11)$$

where  $E = -2^{-2/3} \frac{\Gamma^2(1/6)}{\pi \Gamma(1/3)}$ , and where the density  $\mu(t)$  inside of L

Card 3/4

On the singular elliptic Neumann . . . S/140/62/000/001/002/011  
C111/C444  
is real and continuous. For the existence of the solution it is  
necessary and sufficient that the condition

$$\int_L \eta^{1/2} f(t) ds + \int_{-1}^1 \gamma(\xi) d\xi = 0 \quad (18)$$

be satisfied.

The author mentions Frankl'.

There are 2 Soviet-bloc and 5 non-Soviet-bloc references and one figure.

ASSOCIATION: Universitet g. Galle/Zaale, GDR (University of the town  
Halle/Saale, DDR)

SUBMITTED: April 10, 1961

Card 4/4

WILFERTS, A. A.

State Inst. Microbiol. & Epidemiol. of South East  
Seratov '34 '35

Epizootology of tularemia. I. Role of ectoparasites. Vest. Microbiol.,  
Epidemiol. & parasitol. 13:103-16. '34 @ S. A. Kolpakova & A. A. Flegontova  
Skin test in tularemia according to Pirquet. Vest. Microbiol., Epidemiol.  
& Parasitol. 13:277-8. '34  
Tularemia. A review. 119 ref. Vest. Microbiol., Epidemiol. & Parasitol.  
14: 183-97. '35

VOL'FERTS, Galina Aleksandrovna

Anii-Genie Characteristics of Fungous Filtrates

Dissertation for candidate of a Medical Science degree. Chair of Cutaneous Diseases (head, Prof. A.F. Ukhin) Saratov Medical Institute, 1943

*VOLFERTS, G.A.*

USSR /Microbiology. Medical and Veterinary  
Microbiology.

F-6

Abs Jour: Referat. Zh.-Biol., No. 9, 1957, 35768

Author : Volferts, G.A.; Shvartsman, S.M.

Title : The Pathogenity and Virulence of Cultures of  
Yeast-like Fungi, Isolated in Mycosis of the  
Lower Extremities

Orig Pub: V sb.:Eksperim. i klinich. issledovaniia II, L,  
Medgiz, 1956, 133-134

Abstract: Yeast-like fungi, screened from mycosis of the  
lower extremities and usually viewed as saprophytes  
can under definite conditions be converted into  
pathogenic. Suspensions of cells of *Mycotoruloides*  
and *Geotrichoides*, isolated from people with easy  
scaling in the inter-toe fold in the so-called  
worn off forms of mycosis of the lower extremities,

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USSR /Microbiology. Medical and Veterinary  
Microbiology.

F-6

Abs Jour: Referat. Zh.-Biol., No. 9, 1957, 35768

were injected into guinea pigs, rabbits and mice. Infection was obtained only in the guinea pigs with an intradermal injection of the culture and according to the method of Pak or Blokh. Four to five passages through the organism of the guinea pigs strengthened the virulence of the cultures -- it caused the death of the animal from sepsis both in intravenous and intraperitoneal injections.

Card 2/2

The establishment of the relationship between the organoleptic and the physicochemical and chemical indicators of ripe meat. 1. A. Smorodintsev, V. V. Vol'ferts, N. N. Krylova, N. V. Nikolaeva, Yu. N. Lyaskovskaya and V. I. Pasonina. *Ukrain. Biochem. Zhur.* 10, 81-104 (1937).— in Russian; in *Ukrainian* 103, in English 105-6) (1937).— The chemical and physicochem. indicators of meat kept at 1-3° undergo a sharp change at the 24th hr., after which they change little during 5 days. Meat increases in tenderness during storage up to the 5th-10th day of ripening. Organoleptic appraisal of raw meat and the palatability of cooked meat indicate as optimal a three-day period of ripening at 1-3°. A degree of ripeness corresponding to this period is attained by keeping it at +36° for 12 hrs. and then 12 hrs. at 1-3°. After keeping at +36° for 24 hrs., a shift in the indicators in the direction of spoiling is observed. As tests of the ripeness of meat are suggested the following preliminary indicators (1)  $pH = 5.6-5.7$ , (2) elec. cond.  $25 \times 10^{-4}$ , (3) coeff. lactic acid: elec. cond. = 24, (4) coeff. elec. cond.: ammonia = 2.0. E. E. Stefanowsky

VOL'FERTS, V. Yu.

VOL'FERTS, V. Yu.: Veterinarysanitation Advice, Fifth revised edition

KORYAZHNOV, V. P.: Moscow, State Agricultural Press

1950, 387 pages with illustrations, 11 rubles, 90 kopeks, Bound, Copies --  
25,000. Textbook and teaching aid for higher agricultural educational  
institutions.

SO: , U-4724, Sept. 30, 1953, . (Veterinariya,  
No. 4, Apr. 1951, pp. 60-61, Moscow.)



ACCESSION NR: ARL021613

S/0269/64/000/002/0020/0020

SOURCE: RZh. Astronomiya, Abs. 2.51.162

AUTHOR: Vol'feyl', L.

TITLE: An automatic instrument for photographing artificial earth satellites

CITED SOURCE: Ryul. st. optich. nablyudeniya iskusstv. sputnikov Zemli, spots. vy\* p., 1962, 51-54

TOPIC TAGS: artificial satellite, artificial earth satellite, photographic artificial satellite observation, artificial satellite observation station, satellite observation camera

TRANSLATION: An instrument for photographic observations of bright satellites has been constructed at the artificial earth satellite optical observation station at Gdansk-Oliwa. The instrument consists of three cameras with objectives having  $D:F = 1:4.5$ ;  $F = 13.5$  cm. The cameras are attached to a common parallactic mounting with a clock mechanism. There is an obturator controlled by a micromotor in

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ACCESSION NR: AR4021613

front of the objective of each camera. The cameras record the satellite trail on an arc of a trajectory up to  $160^{\circ}$ . The text is accompanied by a block diagram of the instrument and an electronic circuit which controls the operation of the camera. Operation of the instrument is described. (The article does not give results of testing of the instrument and does not evaluate the possible accuracy of determination of positions and transit times during the photographing of artificial earth satellites. Reviewer's note.) V. Novopashenny.

DATE ACQ: 09Mar64

SUB CODE: AS

ENCL: 00

Card 2/2



39316

S/035/62/000/007/021/083  
A001/A101

3,1230

AUTHOR: Vol'feyl', L.

TITLE: Approximate photographic observations of Earth's artificial satellites at Gdansk-Oliva (Poland)

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 7, 1962, 25, abstract 7A190 ("Byul. st. optich. nablyudeniya iskusstv. sputnikov Zemli", 1960, no. 11, 16 - 20)

TEXT: Photographic observations of Earth's artificial satellites are conducted by means of an astrograph with clock mechanism ( $D = 130$  mm;  $F = 500$  mm;  $1 : 4.5$ ; visual field  $8^{\circ} \times 11^{\circ}$ ) and two cameras ( $1 : 4.5$ ) with Zeiss Ikon-Dominor-Anastigmat and Contessa-Nettar-Anastigmat objectives. In both cases plates  $9 \times 12$  cm (Agfa-Astroplatten) are used. The method of photographing is conventional: Discontinuities in tracks of Earth's artificial satellites are made by means of a contact device - several short ones, one long and then again several short ones. Discontinuities are recorded on the chronograph. A simplified method is employed for processing: The plate with the satellite track

X

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Approximate photographic observations of...

S/035/62/000/007/021/083  
A001/A101

is projected, by means of a magnification device, on the corresponding region of the sky map from the A. A. Mikhaylov Stellar atlas, stars are superposed and coordinates of individual points of the satellite track are read off. The accuracy of coordinate determination is conditioned by the scale of the sky map.

M. Illenko. ✓

[Abstracter's note: Complete translation]

Card 2/2

VOLFIK, A.

"Up-to-date results and future prospects for the development of the Geodetic and Cartographic Institute in Prague."

P. 30. Ustřední správa geodézie a kartografie, (Prague, Czechoslovakia)  
Vol. 4, no. 2, Feb. 1952

SO: Monthly Index of East European Accessions (GEAI) LC, Vol. 7, No. 5, Mar 1952.

VOL'KEVICH, Ya.Ye., inzh.

Increasing the height of the steel towers of a 132 kv. electric line  
without interrupting its operation. Energokhoz. za rub. no. 4:47  
Jl-Ag '60.

(MIRA 13:10)

(Ohio--Electric lines--Overhead)

VOL'FKOVICH, M.I., professor; SHUB, M.G., kandidat meditsinskikh nauk

Role of the upper respiratory tract in poliomyelitis diagnosis  
[with summary in English]. Vest.oto-rin. 19 no.2:40-43 Mr-Apr '57.

1. Iz kliniki bolezney ukha, gorla nosa Saratovskogo meditsinskogo  
instituta.

(RESPIRATORY TRACT, pathol.

changes, diag. value in polio. (Rus))

(POLIOMYELITIS, diag.

role of changes in upper resp. tract (Rus))



*VOL'FKOVICH, M.I.*

VOL'FKOVICH, M.I., professor

Diagnosis and therapy of otogenic abscesses of the brain and of the cerebellum [with summary in English]. Vest.oto-rin. 19 no.3:3-12  
My-Je '57. (MIRA 10:10)

1. Iz kliniki bolezney ukha, gorla i nosa Saratovskogo meditsinskogo instituta.

(BRAIN, abscess

otogenic of cerebrum & cerebellum, diag. & ther., review)

(OTITIS MEDIA, compl.

brain abscess, diag. & ther., review)

VOL'FKOVICH, M.I., prof. (Saratov)

Results of a discussion on the diagnosis and treatment of patients  
with otogenic abscesses of the brain and cerebellum. Vop.otorin.

21 no.6:53-61 N-D '59.

(MIRA 13:4)

(BRAIN ABSCESS)

(OTITIS MEDIA, complications)

VOL'FKOVICH, M.I., prof.

Occupational trauma of the larynx. Zhur. ush., nos. i gorl.bol.  
19 no.5:73-74 S-O '59, (MIRA 14:10)

1. Klinika bolezney ukha, gorla i nosa Saratovskogo meditsinskogo  
instituta.

(LARYNX—DISEASES)

(AGRICULTURAL WORKERS—DISEASES AND HYGIENE)

VOL'FKOVICH, M.I., prof.; USOL'TSEV, N.N., prof.; TIKHOMIROVA, G.I.,  
kand. med. nauk; LIKHACHEV, Andrey Gavrilovich, prof.,  
zasl. deyatel' nauki, red.; VOLKOV, V.A., red.; MOLOGIN, V.N.,  
red. GUDENINA, T.Ye., tekhn. red.

[Instructions for practical studies in otorhinolaryngology for  
medical institutes] Metodicheskie zapiski k prakticheskim za-  
natiyam po otorinolaringologii; dlia meditsinskikh institutov.  
Moskva, 1960. 73 n. (MIRA 15:3)

1. Moscow. Pervyy meditsinskiy institut.  
(OTORHINOLARYNGOLOGY—STUDY AND TEACHING)

SENKOV, P.V., kand.tekhn.nauk; KONOVALOVA, A.P., inzh.; KONONOVICH, Yu.V.,  
inzh.; YELISEYEVA, A.S., teknik; POLYAKOV, V.F., teknik; GROMOV,  
N.K., kand.tekhn.nauk, retsenzent; VOL'FKOVICH, M.Ye., retsenzent;  
CHABROV, I.M., red.

[Regulation of the daily allowance of heat supply to apartment  
houses and public buildings; scientific report] Rezhimy sutochno-  
go regulirovaniia otpuska tepla zhilym i obshchestvennym zdaniyam;  
nauchnoe soobshchenie. Pushkin, Akad.kommun.khoz.im.K.D.Pamfilova,  
1959. 73 p. (MIRA 13:5)

(Heating from central stations)

VOL'KOVICH, S.I.

In memory of Ivan Platonovich Losev. Zhur. prikl. khim. 37  
no.2:447-448 F '64. (MIRA 17:9)

1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
PROCESSES AND PROPERTIES INDEX																			
<p><b>VOL'FMAN, A. D.</b></p> <p><b>Electric heating of glassmelt in the machine canal at the Proletarii Glassworks.</b> G. M. ANIKINAZI, A. D. VOL'FMAN, AND L. V. CHEREVATENKO. <i>Shtklo i Keram.</i>, 6 [9] 8-10 (1949).—Electric heating of the canal increases pickup and improves the quality of sheet glass. The determining factors of good electric heating are a proper system of feeding the current and correct amperage and voltage. At the Proletarii Glassworks both single- and three-phase supplies were used; for the latter, 3 single-phase transformers were joined. Current density was measured by a specially designed densimeter consisting of a rod and two other at a distance of 10 to 12 mm. and connected by insulated and water cooled leads to a millivoltmeter. Measurements were made to a depth of 75 cm., near the left side, near the right side, and in the middle. A Pt-Pt-Rh couple was similarly immersed. Single-phase study was limited to machine No. 6, three-phase study included machines Nos. 5, 6, and 7. The most advantageous distribution of the electrodes is in the preheating chambers. For single-phase supply, the temperature gradient at a depth of 0.15 to 0.20 m. was 6° (<math>I = 180</math> amp) and 7° (<math>I = 140</math> amp), and the temperature at 0.75 m. was 921°C (<math>I = 180</math> amp) and 925° (<math>I = 140</math> amp). Without electric heating, the gradient near the surface was 25° and the temperature at 0.75 m. was 901°C. A completely isothermal melt was obtained at a depth of 0.30 to 0.35 m. Distribution of current density and temperature along the depth were identical. For the three-phase supply, current distribution and temperatures in all three machines were not investigated. The melt was less isothermal than for the single phase current, but it was possible to equalize the temperature along the whole width of the canal. Thermal efficiency, combined with gas heating of the furnace, was only 70 to 72%.</p> <p>B. Z. K.</p>																			
<p><b>ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION</b></p> <p>SECOND DIVISION</p> <p>SECOND ORDER</p>																			

BOBROVSKIY, N.A., prof., red.; VOL'FKOVICH, M.I., prof., red.;  
VOL'FSON, Z.I., prof., red.; LIKHACHEV, A.G., prof., red.;  
NEVSKIY, B.N., red.; PREOBRAZHENSKIY, B.S., prof., red.;  
SAGALOVICH, B.M., doktor med. nauk, red.; SAKHAROV, P.P.,  
prof., red.; UNDRITS, V.F., prof., red. [deceased]

[Transactions of the First All-Russian Congress of  
Otorhinolaryngologists] Trudy pervogo Vserossiiskogo s"ezda  
otorinolaringologov. Moskva, Medgiz, 1963. 318 p.

- (MIRA 17:7)  
1. Vserossiyskiy s"yezd otorinolaringologov. Ist. Volgograd,  
1962. 2. Deystvitel'nyy chlen AMN SSSR (for Preobrazhenskiy).  
3. Chlen-korrespondent AMN SSSR (for Undr'ts). 4. Glavnyy  
otorinolaringolog Ministerstva zdravookhraneniya RSFSR (for  
Bobrovskiy).



VOL'FKOVICH, M. I., prof.

Dangerous toys. Zdorov'e 8 no.7:27 J1 '62.

(MIRA 15:7)

(TOYS)

VOL'KOVICH, M.I., professor.

Certain problems of training students and staff physicians in the field of otolaryngology. Vest.oto-rinl? no.4:15-19 J1-Ag '55.  
(MLRA 8:10)

1. Iz kliniki bolezney ikha, gorla i nosa imeni akad. N.P. Simanovskogo Saratovskogo gosudarstvennogo meditsinskogo instituta)

(OTORHINOLARYNGOLOGY, education,  
in Russia)

VOL'FKOVICH, M.I., prof. (Saratov)

Pathogenetic therapy in acute (common cold) catarrh of the  
upper respiratory tract. Vest.otorin. 23 no.1:3-11 Ja-F '61.

(COLD (PATHOLOGY)) (RESPIRATORY ORGANS--DISEASES) (MIRA 14:2)

VOL'FKOVICH, M.I., prof. (Saratov)

Some problems in the organization of emergency otorhinolaryn-  
gological aid. Vest.otorin. no.5:4-9 '62. (MIRA 15:9)  
(OTORHINOLARYGNOLOGY)  
(FIRST AID IN ILLNESS AND INJURY)

BOBROVSKIY, N.A., prof., red.; VOL'FKOVICH, M.I., prof., red.  
(Saratov); VOL'FSON, Z.I., prof., red.; NEVSKIY, B.N.,  
red.; PREOBRAZHENSKIY, B.S., prof., red.; SAGALOVICH,  
B.M., doktor med. nauk, red.; SAKHAROV, P.P., prof.,  
red.; UNDRITS, V.F., prof., red. [deceased]

[Transactions of the First All-Russian Congress of  
Otorhinolaryngologists] Trudy Vserossiyskogo s"yezda  
otorinolaringologov. Moskva, Medgiz, 1963. 518 p.  
(MIRA 18:3)

1. Vserossiyskiy s"yezd otorinolaringologov. 1st,  
Volgograd, 1962. 2. Deystvitel'nyy chlen AMN SSSR  
(for Preobrazhenskiy). 3. Chlen-korrespondent  
AMN SSSR (for Undrits).

ANTONOV, A.M., prof., red.; VOL'FKOVICH, M.P., prof., red.;  
ZAKHAROVA, G.N., dots., red.; IVANOV, N.R., dots., red.;  
IOFFE, I.L., prof., red.; FOY, A.M., prof., red.;  
SHAMARIN, P.I., prof., red.; SHERISHORINA, S.I., prof., red.

[Transactions of the First City Conference of Young Scientists, Medical Section] Trudy Pervoy gorodskoy konferentsii molodykh nauchnykh rabotnikov. Meditsinskaya sektsiya. Saratov, Saratovskii meditsinskii in-t, 1963. 295 p. (MIRA 18:5)

1. Gorodskaya konferentsiya molodykh nauchnykh rabotnikov. Meditsinskaya sektsiya. Ist, Saratov.

67-1

BC

**Hygroscopicity of ammonium nitrate and its mixtures.** S. I. VOLFKOVICH and B. E. RAMEN (Trans. Sci. Inst. Fertilizers, Moscow, 1927, No. 46, 8-53).—Ammonium nitrate does not absorb moisture at 69-84% humidity between  $-10^{\circ}$  and  $+20^{\circ}$ . The various crystalline modifications of ammonium nitrate differ in hygroscopicity, the most stable being the  $\gamma$ -modification. Admixture with sodium chloride or carnallite increases, and with potassium chloride, potassium dihydrogen phosphate, or ammonium sulphate decreases, the absorption of water. In mixtures of solid salt with soluble substances a reaction takes place; the hygroscopicity is at first additive, but later diminishes. Between  $18^{\circ}$  and  $140^{\circ}$  ammonia is not lost from mixtures of ammonium nitrate with calcium salts.

CHEMICAL ABSTRACTS.

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<p><i>ca</i></p> <p>The production of ammonium phosphate. S. VORONOVICH, <i>Udarnik i Vostok</i> (Fertilisers and Yields) 1929, 30: 7. - The method of Brilake, et al. (C. A. 24, 1470) for the production of <math>\text{NH}_4</math> phosphate requires a 50% concn of <math>\text{P}_2\text{O}_5</math>. <math>\text{H}_3\text{PO}_4</math> concns of 0 to 18% <math>\text{P}_2\text{O}_5</math> can be used when the reactions are allowed to take place in 2 stages according to the equations: (1) <math>\text{H}_3\text{PO}_4, \text{aq.} + \text{NH}_3 = \text{NH}_4\text{H}_2\text{PO}_4 + \text{aq.}</math>; (2) <math>\text{NH}_4\text{H}_2\text{PO}_4, \text{aq.} + 2\text{NH}_3 = (\text{NH}_4)_3\text{PO}_4 + \text{aq.}</math> By regulating the dose of <math>\text{NH}_3</math> in the first stage most of the sesquioxides are pptd. and the phosphates from the second stage are technically pure. The first stage, when brought to the reaction of methyl red, leaves behind all of the sesquioxides. The <math>(\text{NH}_4)_3\text{PO}_4</math>, because of its instability, is (1) treated with a stream of hot air and the <math>\text{NH}_3</math> liberated is caught and utilized, (2) is mixed with the products of the first stage, (3) is mixed with the original <math>\text{H}_3\text{PO}_4</math> soln. in the proportion to obtain <math>\text{NH}_4\text{H}_2\text{PO}_4</math> and <math>(\text{NH}_4)_3\text{HPO}_4</math>, or (4) is mixed with <math>\text{H}_2\text{SO}_4</math>.</p> <p>J. S. JORRA</p>																									
<p>ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																									

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VOL'KOVICH, S-I. Current problems in the technology of fertilizers. R. V. BRITZER AND S. I. VOL'KOVICH. *Udobrenie i Urozhai* (Fertilizers and Crops) 1929, 259-67.—A review of the processes to obtain sol. phosphates is presented. A discussion of each one and the reactions involved are given. The following are reviewed: (1) extrn. of phosphoric acid with H<sub>2</sub>SO<sub>4</sub>, the production of triple phosphate, enriched superphosphate and NPK phosphate, (2) thermal extrn. of phosphoric acid and the problem of obtaining high per cent phosphates.

ASAC-SLA METALLURGICAL LITERATURE CLASSIFICATION

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VOL'FKOVICH, S.I.

Results of the investigation of a new acid cycle for reworking of phosphorites.  
 S. I. VOL'FKOVICH AND V. P. KAMFOLKIN. *Ukrainskii Khim. Zhur.* 4, Tech. pt. 101-7  
 (1929). The lab. methods developed for the cyclic reworking of phosphorites (I) by  
 the acid process (C. A. 22, 4206) were applied on a semi cont. scale to the lowest grades  
 of I with satisfactory results.  
 CHAS. BLANC

ABB-SLA METALLURGICAL LITERATURE CLASSIFICATION

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<p><b>VOL'FKOVICH, S.I.</b></p> <p>The extraction of phosphoric acid from low-grade phosphorites with a mixture of sulfuric acid and ammonium sulfate. S. I. VOL'FKOVICH AND L. R. BERLIN. <i>Mineral'nos Sibir'sk Tsvetnits Mel.</i> 4, 396-407 (1920).--The most effective mixt. contains 16-22.2% <math>(\text{NH}_4)_2\text{SO}_4</math>. Amts. above 22.2% decrease the efficiency of extn. With the above mixt. the rate of extn. is the same as when <math>\text{H}_2\text{SO}_4</math> alone is used. The amt. of lower oxides in extn. is considerably decreased by the presence of <math>(\text{NH}_4)_2\text{SO}_4</math>. By in-</p> <p>creasing the time of extn. all lower oxides can be eliminated from the extn. Addn. of <math>(\text{NH}_4)_2\text{SO}_4</math> to <math>\text{H}_2\text{SO}_4</math> speeds up filtration of the above extn. The <math>(\text{NH}_4)_2\text{SO}_4</math> used may be obtained by treating vacuum-phosphorites with <math>\text{NH}_3</math> and <math>\text{CO}_2</math>. M. A. J.</p>																									
<p>ASAC-SLA METALLURGICAL LITERATURE CLASSIFICATION</p> <p>1920-1929 1930-1939 1940-1949 1950-1959 1960-1969 1970-1979 1980-1989 1990-1999</p>																									

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**PROCESSES AND PROPERTIES INDEX**

**Oxidation of ammonium sulfite and preparation of ammonium sulfate from gaseous sulfur dioxide, ammonia and water vapor.** S. L. VOLZHEKICH AND D. L. TIRKIN. *J. Chem. Ind. (Russia)* 6, 1323-32, 1403-9(1929).—A review of patents and literature and calcn. of equil. consta. at various temps. for the formation of  $(\text{NH}_4)_2\text{SO}_4$  from solid  $(\text{NH}_4)_2\text{SO}_4$  and the gaseous components are given. Oxidation of  $(\text{NH}_4)_2\text{SO}_4$  in aq. soln. by passing air through it was studied under the influence of concn., rate and velocity of air passing through, surface area of contact, catalysts, etc. Complete oxidation of the salt by air can be accomplished in towers filled with silica gel or with quartzite. Another method of prepn. is by double decompn. with  $\text{CaSO}_4$ , which can be regenerated by oxidation with air. Still another method is spraying the soln. into air. The optimum temp. for the above oxidation is  $70^\circ$ . The catalytic action of  $\text{KMnO}_4$ ,  $\text{Cr}_2\text{O}_3$ ,  $\text{V}_2\text{O}_5$ ,  $\text{Se}$ ,  $\text{CuSO}_4$ ,  $\text{KNO}_3$  and  $\text{KCl}$  was too small for practical purposes. Oxidation of solid  $(\text{NH}_4)_2\text{SO}_4$  by exposure to air under various conditions was very slow. The limit (30-5%) of this reaction was reached in 2-3 hrs. at  $60-70^\circ$ . Expts. on the production of the sulfite and sulfate in the solid form by the interaction of gaseous  $\text{NH}_3$ ,  $\text{SO}_2$ , air and  $\text{H}_2\text{O}$  vapor showed com. possibility, and indicated a successful application of the Cottrell precipitator. The product prepd. by the dry method in a Cottrell app. is more difficult to oxidize than that obtained by the wet method. It is proposed to treat the product from the Cottrell app. with air at  $22^\circ$ , causing the sulfate to ppt. and the sulfite to decompose to  $\text{NH}_3$  and  $\text{SO}_2$ , in which form they can be recirculated through the app. until they come down as  $(\text{NH}_4)_2\text{SO}_4$ . A. C. ZACHLIN

**AIR-SEA METALLURGICAL LITERATURE CLASSIFICATION**

**REGIONAL BOMBING**

CA  
VOL'F KOVICH, S. I.

Obtaining ammonium sulfate from phospho-gypsum. S. I. VOL'KOVICH, V. P. KAMINER AND A. FOMINOVICH. *Trans. Sci. Inst. Fertilizers* (Moscow) No. 64, 11 (in German) (2 4) (1929). Decompos. of phospho-gypsum by  $\text{NH}_3$  and  $\text{CO}_2$  shows that the gypsum was obtained from a low-grade phosphate rock contg.  $\text{P}_2\text{O}_5$ , 31,  $\text{Al}_2\text{O}_3$ , 10,  $\text{CO}_2$ , 32,  $\text{CaF}_2$ , 1.5%. By treating the gypsum with  $\text{NH}_3$  and  $\text{CO}_2$  it was possible to regenerate 92-97% of the  $\text{H}_2\text{SO}_4$  in the gypsum. The  $(\text{NH}_4)_2\text{SO}_4$  obtained was a 30% soln. Natural gypsum does not decompose as fast as that obtained in acid phosphate manuf. The highest sulfate recovery was obtained by using 6-10%  $\text{NH}_3$  and  $\text{CO}_2$  above the stoichiometric requirements. By using 10-15%  $\text{CO}_2$  and  $\text{NH}_3$ , the time to complete the reaction was 8 hrs. The use of 30%  $\text{CO}_2$  slowed down the process, taking twice as long. Liquid  $\text{NH}_3$  was more effective than gaseous. The decompos. took place without artificial cooling. The temp. of decompos. was 40-55°. Lowering the temp. to 35° lowered the output of  $(\text{NH}_4)_2\text{SO}_4$ . The lime residue retains up to 1.5%  $\text{NH}_3$ . The wash waters from the lime residue may contain 0.5 to 1%  $\text{NH}_3$ , either free or as  $(\text{NH}_4)_2\text{CO}_3$ , 0.2%  $\text{CaO}$  and traces of  $\text{Fe}$  and  $\text{Al}$ . The addn. of  $\text{NaCl}$  or  $\text{KCl}$  in the process did not aid in better utilization of  $\text{NH}_3$ . The process is carried out at atm. pressure in a closed system with const. stirring. The wash water from the lime residue could be used for mixing a new batch of phospho-gypsum, to which more  $\text{NH}_3$  and  $\text{CO}_2$  are added. Graphs show the temp. changes during the process, the variations in yield due to changes in temp., and changes in adding the various components. A drawing of a lab. outfit is given. J. R. Jovan

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<p><i>CH</i></p> <p><b>Processes and Properties Model</b></p> <p>Semi-commercial scale of working over phosphates by acidulation into concentrated fertilizers. B. I. VOLKOVICH AND V. P. KAMOLKIN in collaboration with L. E. BERLIN, L. V. VLADIMIROV, S. K. VOSKRESENSKI, L. B. GRINSHPAN, A. A. IONASA, V. G. KALDAROLLA, I. I. KUKUSHKIN, B. A. LESHEV, T. I. PAUTKINA AND A. A. BOKOLOVSKII. <i>Trans. Sci. Inst. Fertilizers</i> (Moscow) No. 67, 8-134 (in German 135-43) (1929); cf. C. A. 24, 2246.—Tests were made on a factory scale to find out the proper concentration of <math>H_2SO_4</math> to mix with rock phosphate of a low <math>P_2O_5</math> content, the degree of fineness the rock phosphate has to be ground, the temperature of reaction and the time of stirring; besides that, the improvement in the apparatus and methods of handling the production were investigated. The phosphoric acid and acid phosphate produced were treated with <math>NH_3</math> in order to produce ammonium phosphate. The proportions of the various components for the best results, temperature conditions for the crystallization of the salts, methods of filtering and of drying, apparatus used and a number of questions pertaining to factory production also were studied. The results are presented for a series of phosphates from various deposits. The question of making precipitated calcium phosphate has also been subjected to factory trials, and again the various problems connected with the reactions involved are presented and discussed. Tests were also made on the production of P-enriched acid phosphate products. The various topics are summarized in German and presented at the end of the publication.</p> <p style="text-align: right;">J. S. JOFFE</p>																																																																																																																																																											
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**C.A.**

**SOL'FKOVICH, S.-I.**

**Phosphate fertilizers. N. I. Vol'tovych. Russ.  
13,347, Mar. 81, 1930. Phosphates are exhd. with HCl  
and the soln. treated with  $(\text{NH}_4)_2\text{SO}_4$  and (or)  $\text{K}_2\text{SO}_4$   
and  $\text{NH}_4\text{OH}$ .**

**ASD-SLA DETALLUNICAL LITERATURE CLASSIFICATION**

**RIGHTS DIVISION**



<p>CA</p> <p>VOL'FKOVICH, S.I.</p> <p>Fertilizers. NAUCHNUI INSTITUT PO UDONRENIYAM IM. PROF. SAMOILOVA AND S. I. VOL'FKOVICH, L. E. BERLIN and A. A. IONAS. Russ. 26,310, Oct. 30, 1930. Fertilizers are prepd. by extg. nephelinite-apatite ore with <math>H_2SO_4</math> directly or after treatment with <math>NH_3</math> or <math>NH_4</math> or K salt and drying at 100 to 150°.</p>		16
<p>ASB-5LA METALLURGICAL LITERATURE CLASSIFICATION</p>		

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<p><b>VOLFKOVICH, S. I.</b></p> <p><i>co</i></p> <p><b>Processes and Properties Index</b></p> <p><b>15</b></p> <p><b>Production of superphosphate from Khibinsk apatite. S. I. VOLFKOVICH, L. I. BERLIN AND L. B. GRIMANOV. <i>Udobrenia i Urozhai (Fertilizers and Crops)</i> 2, 300-12 (1930); <i>cf. C. A.</i> 25, 763. — Enriched apatite obtained from nepheline apatite rock by fine grinding and sieving or flotation is used on a semifactory scale for the production of acid phosphate. The quantity of <math>H_2SO_4</math> to be used was based on the following equation: <math>2Ca_3P(PO_4)_2 + 7H_2SO_4 + 17H_2O = 3CaH_2(PO_4)_2 + 11H_2O + 7CaSO_4 + 2H_2O + 2H_2P</math>. It was found that by using 88% of the rock milled to less than 0.1 mm. a 40% <math>P_2O_5</math> raw product was converted to acid phosphate of a good phys. condition with 18% sol. <math>P_2O_5</math>. With 83% milled to less than 0.1 mm. the raw product contained 38.9% <math>P_2O_5</math> and the final acid phosphate 16.2% <math>P_2O_5</math>. When the quantity of particles less than 0.1 mm. fell below 28-34% <math>P_2O_5</math> the phys. condition of the final product was poor. It was found possible to mix the high grade nepheline apatite with the Vyatka raw phosphate low in <math>P_2O_5</math> (24.5% <math>P_2O_5</math>), half and half, and still obtain a good product. J. S. Joffe</b></p>																			
<p><b>ASH-56A METALLURGICAL LITERATURE CLASSIFICATION</b></p>																			
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The production of potassium sulfate from potassium chloride and sulfur dioxide. P. BRITZER, S. VOLPKOVICH AND M. KAMENSKAYA. *Udobrenia i Uroshai (Fertilizers and Crops)* 2, 492-5 (1930).—Expts. with a no. of catalytic agents to speed up the reaction between KCl and SO<sub>2</sub> in the presence of water vapor were made. At 500°, without a catalyst, only 4.5% of the KCl decompd. in 20 hrs. CoSO<sub>4</sub>, Co(NO<sub>3</sub>)<sub>2</sub>, Fe<sub>2</sub>O<sub>3</sub>, Fe(OH)<sub>3</sub>, Al<sub>2</sub>O<sub>3</sub>, CuO, burned pyrites and a series of slags contg. oxides of Al, Fe, Si, Ca and Na were tried. These were prepd. in the lab. or taken from iron plants. Max. effects were obtained from the slags contg. oxides of Fe, Al, Si and Na. The slag was ground to pass a sieve with 4900 holes per sq. cm., and 0.5% of the slag was added to the salt, which was ground to particles of 0.2-0.4 mm. diam. The yield of sulfate reached 98.2-99.8% in one hr. With 0.1% Fe<sub>2</sub>O<sub>3</sub> or 0.01% Fe(OH)<sub>3</sub> (of the wt. of KCl) the yield was 74-83% in 3.75 hrs. Burned pyrites gave a yield of 70% in 2 hrs. when 1% was used. With 0.5% CuO the yield reached 44% in 30 min. Various other slags were tried out, but without much improvement. I. S. JORVA

ASS. SLA METALLURGICAL LITERATURE CLASSIFICATION

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<div style="float: left; width: 10%; font-size: 2em; font-weight: bold;">CN</div> <div style="float: right; width: 10%; font-size: 3em; font-weight: bold;">15</div> <div style="clear: both;"></div> <p>Superphosphate enriched with ammonia. S. I. VOL'KOVICH, L. E. BERLIN, I. L. HOFMAN AND A. A. IONAS. <i>Udobrenie i Urozhai (Fertilizers and Crops)</i> 2, 550-69 (1930).—Two kinds of raw phosphate were tried out in the prepn. of ammoniated superphosphate by the use of <math>H_2SO_4</math> and the phosphates of ammonia. From Portland phosphate with mono-ammonium phosphate and <math>H_2SO_4</math>, a product was obtained contg. 21% <math>P_2O_5</math> with 16.5% available, and 10% N. The amt. of <math>H_2SO_4</math> used was 16% above that required by the stoichiometric equations, and its strength was diluted to 40% by the use of a 20% soln. of <math>NH_4H_2PO_4</math>. When a mixt. of mono- and di-ammonium phosphates was used, the product contained 23% <math>P_2O_5</math> with 18% available, and 3% N. The <math>H_2SO_4</math> was also 16% above the stoichiometric and was diluted to 35% with 20% <math>NH_4H_2PO_4</math>. With <math>(NH_4)_2HPO_4</math> alone the product contained 23% <math>P_2O_5</math> with 19% available, and 5% N. The <math>H_2SO_4</math> was 10% above stoichiometric, and it was diluted to 25% with a 20% soln. <math>(NH_4)_2HPO_4</math>. For the Saratov phosphates triammonium phosphate (in liquid form) with <math>H_2SO_4</math> was used, and the product obtained was 22-23% <math>P_2O_5</math> with 20.5% available, and 10% N. The optimum conditions were: 100 parts (by weight) of phosphate for 80 parts of <math>(NH_4)_2HPO_4</math> for each unit weight of <math>(NH_4)_2HPO_4</math>, 0.6 part of 60 Bé. <math>H_2SO_4</math> was used besides what is necessary to convert the raw phosphate into superphosphate. By using a satd. soln. of <math>(NH_4)_2HPO_4</math> the product contained 18% <math>P_2O_5</math> with 17% available, and 5% N. The reagents used, were: 100 parts of phosphate, 160 parts of the satd. soln. with 0.74 part of 60 Bé. <math>H_2SO_4</math> for each part of <math>(NH_4)_2HPO_4</math> besides what is necessary for the production of ordinary superphosphate. The best product from the standpoint of phys. conditions was obtained by the use of the mixt. of mono- and di-ammonium phosphate. Production on a semi-factory scale is under way with the mixts. mentioned.</p> <p style="text-align: right;">J. S. JOWEN</p>																									
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<p>Experiments on the production of thermophosphates from the Khibinsk apatite. S. I. VOLPKOVICH AND S. S. PERELMAN. <i>Udolenie i Urozhai (Fertilizers and Crops)</i> 2, 870-80 (1966). By a flotation method a product was obtained from the Khibinsk apatite with a 40.6% <math>P_2O_5</math> content. This and 2 other samples contg. 27.12 and 19.47% <math>P_2O_5</math> were fused with <math>Na_2CO_3</math>. By using 30.3 parts of the 40.6% <math>P_2O_5</math> sample for 100 parts of the phosphate at 900-1200° a product was obtained with a 70% coeff. of decompn., the latter representing the ratio of citrate-sol. <math>P_2O_5</math> to the total. With a 25% excess of <math>Na_2CO_3</math>, the coeff. increases irrespective of the temp. from 900° to 1200°. With a 50% increase the proportionality between the <math>Na_2CO_3</math> and increase in <math>P_2O_5</math> disappears. At 1100° the coeff. drops from 75.3 to 60.7% and then again increases at 1200° to 82.6%. At 1300° the mixt. fuses, but there is no increase in <math>P_2O_5</math>. The optimum conditions were found to be at 1200° with 1.5 times the amt. of soda used originally, i. e., 45 parts of <math>Na_2CO_3</math> to 100 parts of apatite. With the 27.1% <math>P_2O_5</math> sample at 1000-1200° with 20 parts of <math>Na_2CO_3</math> to 100 parts of phosphate the coeff. of decompn. was 70-80%. A 25% increase of <math>Na_2CO_3</math> increased the coeff. of decompn. almost to 100%. Even at 900° such a mixt. gave an 82.2% coeff. With the 19.5% <math>P_2O_5</math> sample at 1200° with 22 parts of <math>Na_2CO_3</math> to 100 parts of the phosphate almost 100% of the phosphate became citrate sol. Addns. of 10% <math>SiO_2</math> to the mixt. slightly increased the coeff. of decompn. <math>SiO_2</math> alone had no effect. An increase of the <math>SiO_2</math> to 20% produced neg. results. Addns. of <math>CaCO_3</math> alone had no effect, but with the <math>Na_2CO_3</math> an increase in the coeff. took place. The time factor of heating the mixt. brought out the fact that 30 min. gives the optimum. The cooling of the mix immediately after 30 min. heating increased the soly. of the product. Heating with various chlorides gave neg. results. With <math>Na_2SO_4</math> and charcoal a product was obtained with a coeff. of 80%. Vegetation expts. with thermophosphates show that it is just as good as Thomas slag, but it is slightly inferior to superphosphate.</p> <p>J. S. JORVM</p>																										15																									
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Decomposition of phosphorite with hydrochloric acid and with mixtures of hydrochloric acid, sulfuric acid and ammonium chloride. S. I. VOL'KOVICH AND S. B. I'BRILMAN. <i>Mineralog. Sbornik</i> 8, 870-80 (1930); <i>Chem. Zvesti</i> 1930, 11, 110; <i>U.S.S.R. Acad. Sci. Bull.</i> 1930, 11, 110. 23, 2007. — Wyatka phosphorite, contg. 30.7% $P_2O_5$ , 5.1% $CaO$ , 4.5% $(Al, Fe)_2O_3$ yielded HCl exts. with 8-9% $P_2O_5$ . 2.04 parts 20.8% HCl decompose 95-96% of the mineral. The optimal HCl concn. is 20%. The exts. contain 0.5-0.8% asquinoxides which were extd. up to 21-40% from the mineral. A mixt. of HCl and $H_2SO_4$ acts with the same good result. Addn. of $NH_4Cl$ decreases the rate of decompn. ALFRED HUNGER																			
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<p>Semi-plant-scale experiments on acid conversion of phosphorite to concentrated fertilizers. S. I. VOLKOVICH AND A. A. SOKOLOVSKI. <i>J. Chem. Ind. (Moscow)</i> 7, 34-44 (1930); <i>Chem. Zvezd.</i> 1930, 11, 606. -- Extn. of <math>H_2PO_4</math> from phosphorites, prepn. of Ca "diphosphate," <math>NH_4</math> phosphate from phosphorite, etc., were carried out on a semi-plant scale.</p> <p>ALFRED HUNTER</p>			
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**VOL' FROVICH, S. I.**

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Experiments on the manufacture of superphosphate from Khibinsk apatite. S. I. VOL'FROVICH AND L. K. BERLIN. *J. Chem. Ind. (Moscow)* 7, 88-106(1930); cf. C. A. 25, 768, 1819.

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J. S. Joffe

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<p><b>Vol. F KOVICH, S. I.</b></p> <p><b>PROCESSES AND PROPERTIES INDEX</b></p> <p>Production of potash-nitrogen fertilizers from carnallite. (Preliminary communication). S. I. VOYKOVICH, R. R. KEMEN AND M. S. NIKOLAEV. <i>J. Chem. Ind. (Moscow)</i> 7, 246-50 (1930); <i>Chem. Zentr.</i> 1930, II, 446-7. -- By treating a <math>MgCl_2</math> <math>KCl</math> soln. of the compn. of natural carnallite with 3.5% <math>NH_3</math> (in the liquid phase) at 60-80°/ 0.5% <math>Mg</math> was expd. <math>NH_3 + CO_2</math> ppt. 96% <math>Mg</math>. The best results are obtained by satg. the soln. with a 1.5 excess of <math>NH_3</math> first and then with less than the required amt. of <math>CO_2</math>. The filtrates contain 33.3% <math>K_2O</math> and 17% <math>NH_3</math>. They can be used as K-N fertilizers. Practically the same sepn. was attained with natural Seolikamsk carnallite.</p> <p style="text-align: right;">A. BURGER</p>																									
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<p><i>Vol. FKOVICH, S.I.</i></p> <p><i>CR</i></p> <p><i>15</i></p> <p>Fertilizer. S. I. VOLKOVICH. Russ. 23,418, Oct. 31, 1931. In decomposing carnallite with <math>\text{CO}_2</math> and <math>\text{NH}_3</math> to sep. Mg with the ppt., the salt solns. obtained are treated with <math>\text{H}_2\text{SO}_4</math>, <math>\text{H}_3\text{PO}_4</math>, or <math>\text{HNO}_3</math>, while the HCl obtained (in case <math>\text{HNO}_3</math> is used this refers also to Cl and nitrosyl chloride) is used for the extn. of <math>\text{H}_3\text{PO}_4</math> from phosphorites.</p>																													
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<p><b>VOL'KOVICH, S. I.</b></p> <p>The production of soluble phosphates from the Chuvash phosphate rock. S. I. VOL'KOVICH AND A. P. METALNIKOV. <i>Udobrenia i Uvazhet (Fertilizers and Crops)</i> 3:61-4(1937). Phosphate rock contg. 21-22% <math>P_2O_5</math> of a high carbonate content and a high sesquioxide content was mixed with soda and heated at temps. up to 1300°. It was found that by using 25 parts of soda to 100 parts of phosphate the optimum temp. was 1000-1100°. At this temp. the coeff. of decompn. (the % <math>P_2O_5</math> sol. in citric acid) was as high as 96%. The mixt. caked and was easily crushed. At higher temps. the mixt. fused and did not break up so easily and the coeff. of decompn. dropped.</p> <p style="text-align: right;">J. S. Jovan</p>					
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<p><i>CO</i></p> <p><b>VOLFKOVICH, S. I.</b></p> <p><b>Utilization of sodium sulfate deposits for manufacturing soda ash and ammonium sulfate.</b> S. I. VOLKOVICH, A. P. BELOPILSKII AND B. A. LEBEDYEV. <i>J. Applied Chem.</i> (U. S. S. R.) 4, 177-82 (1931).—With a view to development of a process represented by the equation <math>\text{Na}_2\text{SO}_4 + 2\text{NH}_4\text{HCO}_3 \rightleftharpoons (\text{NH}_4)_2\text{SO}_4 + 2\text{NaHCO}_3</math>, a study is made of the soly. of the salts involved. A satd. aq. soln. of <math>\text{NH}_4\text{HCO}_3</math> at 15° contains 18.99% of <math>\text{NH}_4\text{HCO}_3</math>, and a satd. aq. soln. of <math>(\text{NH}_4)_2\text{SO}_4</math> at 15° 42.45% of <math>(\text{NH}_4)_2\text{SO}_4</math>. The system: <math>(\text{NH}_4)_2\text{SO}_4</math>, <math>\text{NH}_4\text{HCO}_3 \cdot \text{H}_2\text{O}</math> at 15° at the point of mutual satn. contains <math>\text{NH}_4\text{HCO}_3</math>, 3.04, <math>(\text{NH}_4)_2\text{SO}_4</math>, 39.71. The method and app. used for detn. of soly. are described. J. S.</p>																																																			
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<p>26</p> <p>Preparation of double and of enriched super-phosphates from low-grade phosphorites. S. I. VOLKOVITSKIY and L. E. RUSLIN (J. Chem. Ind. Russia, 1931, 8, No. 13, 1-11).—A product containing 37-38% <math>P_2O_5</math> and 1-13% <math>H_2O</math> is obtained by heating phosphorite in a rotating drum for 1-3 hr. at such a temp. that the issuing vapours are at 90-100°.</p> <p>R. TRUBKOWSKI.</p>																			
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YOL'F KOVICH, S. I.

Decomposition of Khibin apatite-nephelite ore by sulfuric acid. S. I. Vol'fovich, I. Berlin, A. Vinokurova and A. Salova. *J. Chem. Ind. (Moscow)* No. 15-16, 1-8(1931).—The order of decreasing rapidity of decompn. of the minerals in this ore by  $H_2SO_4$  is nephelite, apatite, titanomagnetite and egrite. The amts. of acid used for

mists of these must be the sum of the amts. used to dissolve the individual minerals. When small amts. of egrite are present, however, they may be disregarded. Since the  $SiO_2$  gel formed on decompn. of apatite-nephelite ore by acid tends to cover up the phosphate and prevent soln., it is best to use strong acid and very finely ground ore. High temps. are no help. The amt. of acid in excess of the theoretical amt. must be detd. empirically. The apatites, in general, decomp. more slowly than other phosphate ores.

H. M. Lickstein

ASB-34.8 METALLURGICAL LITERATURE CLASSIFICATION

VOL'F KOVICE, S.I.

The possibility of the joint use of sulfur dioxide and chlorine in the production of fertilizers. S.I. VOL'F KOVICE. J. Chem. Ind. (Moscow) 8, No. 23-24, 25-6(1971)  
SO<sub>2</sub> and Cl<sub>2</sub> react to give a mixt. of HCl and H<sub>2</sub>SO<sub>4</sub>, which may be used to ext. P<sub>2</sub>O<sub>5</sub> or  
may be converted into a mixt. of the NH<sub>4</sub> salts and used directly as a fertilizer.  
H. M. LAICHTER

ABX-SLA METALLURGICAL LITERATURE CLASSIFICATION

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<p>ca</p> <p>The achievements of the phosphate fertilizer industry and the scientific investigations in the U. S. S. R. for the last 15 years (1917-1932). S. I. Volkovich. <i>Gosudarst. Khimiko-Tekhn. Institut</i> (Moscow-Tsilingrad) 1932, 1-44.---V. takes up the progress made in the production of phosphate fertilizers and discusses the theoretical chem. and physicochem. background of the new processes developed. J. S. Joffe</p>																									
ASA-ILA METALLURGICAL LITERATURE CLASSIFICATION																									
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The use of gypsum and phosphogypsum in chemical industry and rural economy.																									
S. I. VOL'KOVICH AND A. A. SOKOLOVSKII. <i>J. Chem. Ind. (Moscow)</i> 1932, No. 8,																									
15-24. The sources of $\text{CaSO}_4$ in the U. S. S. R. are discussed, and recent Soviet work																									
on its use is reviewed. H. M. LICKSTER																									
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Vol. FKOVICH, S. I.

Physicochemical investigation of the process for manufacturing ammonium phosphates (ammophos). S. I. VOLKOVICH, L. E. BERLIN AND H. M. MANTERV. *J. Applied Chem. (U. S. S. R.)* 5, 1-14(1952).—The alk. part of the isotherm  $H_2O-NH_3$ .

$P_2O_5 \cdot SO_3$  has been investigated at 25°. Soln. of  $NH_4H_2PO_4$  increases greatly in presence of  $(NH_4)_2HPO_4$ , while that of  $(NH_4)_2HPO_4$  increases only slightly on addn. of  $NH_4H_2PO_4$ . Soln. of  $(NH_4)_2HPO_4$  is lowered about  $\frac{1}{4}$  in the presence of  $(NH_4)_2PO_4 \cdot 3H_2O$ . Soln. of  $(NH_4)_2PO_4 \cdot 3H_2O$  decreases about 4 times in the presence of small quantities of  $(NH_4)_2HPO_4$ , but remains const. on further addns. Soln. of  $NH_4$  phosphates is lowered about  $\frac{1}{2}$  in the presence of  $(NH_4)_2SO_4$ . Soln. of  $(NH_4)_2SO_4$  is lowered somewhat in the presence of  $(NH_4)_2HPO_4$  or  $(NH_4)_2PO_4$ , but first slightly increased and then lowered on adding successive quantities of  $NH_4H_2PO_4$ . The concn. of  $P_2O_5$  at the binary point  $NH_4H_2PO_4$ - $(NH_4)_2HPO_4$  is lowered by 1.5 and at the binary point  $(NH_4)_2HPO_4$ - $3H_2O$ - $(NH_4)_2PO_4$  it is increased by 3 in presence of  $(NH_4)_2SO_4$ . Addn. of  $NH_3$  to satd.  $NH_4H_2PO_4$  soln. first increases greatly the  $P_2O_5$  content of soln. up to the binary point  $(NH_4)_2HPO_4$ - $NH_4H_2PO_4$ , but then lowers it practically to zero when  $NH_3$  concn. is high. A similar effect is observed on adding  $NH_3$  to a soln. of  $(NH_4)_2SO_4$  and  $NH_4H_2PO_4$ . On adding  $NH_3$  to a soln. contg.  $H_2PO_4^-$  or  $H_2PO_4^-$  and  $H_2SO_4$ , the  $(NH_4)_2PO_4 \cdot 3H_2O$  in the ppt. is almost free of sulfate and contains practically all of the  $P_2O_5$  (provided  $SO_4/P_2O_5$  is not over 4:1). The use of  $(NH_4)_2SO_4$  permits pptn. of not over  $\frac{1}{2}$  of the  $P_2O_5$  in the soln. Double salts contg.  $NH_3$  phosphate and sulfate were not found. V. KALICHEVSKY

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

VOLFKOVICH, S. I.

Oxidation of sulfites. I. S. I. VOLFKOVICH AND A. P. BILONZHARIL. *J. Applied Chem. (U. S. S. R.)* 5, 300-28 (1953).—Oxidation of  $\text{K}_2\text{SO}_3$  in aq. soln. with  $\text{O}_2$  was studied. At a const. rate of  $\text{O}_2$  flow the increase in  $\text{K}_2\text{SO}_3$  concn. lowers the rate of oxidation. At a const.  $\text{K}_2\text{SO}_3$  concn. the increase in the rate of  $\text{O}_2$  flow increases the rate of oxidation up to a certain max. beyond which a further increase in the rate of  $\text{O}_2$  flow is without effect. At this max. the reaction is monomol. but after 94%  $\text{K}_2\text{SO}_3$  is oxidized the value of the reaction const. falls off. The rate of the reaction approx. doubles by raising the temp. from 0 to 10° at the limiting  $\text{O}_2$  rate. II. *Ibid* 529-51. The reaction is exceedingly slow at high and low  $p_{\text{H}}$  concns. In oxidizing at 0° a 0.373 molar  $\text{K}_2\text{SO}_3$  for 8 min. 63% was oxidized when  $p_{\text{H}} = 8.3$ ; 3% at  $p_{\text{H}} = 4.2$ ; none was oxidized at  $p_{\text{H}} = 12$ . The initial  $\text{H}^+$  concn. increases during the reaction if  $p_{\text{H}} > 8$  but remains const. if  $p_{\text{H}} < 8$ . The falling off of the reaction const. when initial  $p_{\text{H}} > 8$  is explained by the accumulation of  $\text{H}^+$ . Oxidation proceeds differently in acid and alk. media.  $\text{CoSO}_4$  is a very effective catalyst. At  $p_{\text{H}} = 7.0$  other catalysts are effective in the following order:  $\text{FeSO}_4$ ,  $\text{CuSO}_4$ ,  $\text{NiSO}_4$ ,  $\text{MnSO}_4$ , inactive. At  $p_{\text{H}} = 9.0$ :  $\text{CuSO}_4$ ,  $\text{NiSO}_4$ ,  $\text{MnSO}_4$ ,  $\text{FeSO}_4$ , inactive. In highly alk. medium:  $\text{NiSO}_4$ ,  $\text{CoSO}_4$ ,  $\text{CuSO}_4$ ,  $\text{FeSO}_4$ , and  $\text{MnSO}_4$ , inactive. III. *Ibid* 552-6. Solid  $\text{K}_2\text{SO}_3$  is not oxidized with dry  $\text{O}_2$  at 25-80°, but the reaction proceeds if  $\text{O}_2$  is moist.  $\text{CaSO}_3$  is not oxidized at 25-110° even when suspended in water. The reaction proceeds, however, in the presence of  $\text{CoSO}_4$ ,  $\text{MnSO}_4$  or  $\text{CuSO}_4$  (alum has very little effect). V. KATICHVARY

ASA 35A METALLURGICAL LITERATURE CLASSIFICATION

VOLKOVICH, S.I.		13-J-8	
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<p>Gypsum and "phosphogypsum." S. I. Volkov. (Min. Sci., 1933, 7, No. 11-12, 44-49).—Experiments on the utilization of gypsum and <math>\text{CaSO}_4</math> from <math>\text{H}_3\text{PO}_4</math> manufacture in the production of <math>(\text{NH}_4)_2\text{SO}_4</math>, <math>\text{H}_2\text{SO}_4</math>, cement, etc. are described. Ch. Ann.</p>			
<p>ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>			
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The conversion of Khibin apatite into fertilizers. S. I. Vol'kovich, et al. *Trans. Sci. Inst. Fertilizers* (U. S. S. R.) No. 95, 3-64(1932).—The authors discuss the manu.: (1) of ordinary acid phosphate from Khibin apatite, (2) of phosphoric acid by acid extr. methods, (3) of concd. fertilizers from the phosphoric acid exts., (4) of thermo-phosphate and (5) of electrothermal volatilization of  $P_2O_5$ . Exptl. data are given. Diagrams, charts, curves and tables illustrate the phases discussed. J. S. Joffe

ASSOCIATED METALLURGICAL LITERATURE CLASSIFICATION

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An investigation of Khibin apatite as applied to the fertilizer industry. S.I. Volkovich. Trans. Sci. Inst. Fertilisers (U. S. S. R.) No. 96, 3-31(1932).—V. discusses the geology of the apatites in Khibin, the prepn. of the raw material for the manuf. of acid phosphate (methods of sepg. the fractions with a higher  $P_2O_5$  content), and the chem. processes involved in prepn. sol. phosphates—the acid method, the basic-thermal treatment & (thermo-phosphate), and thermal volatilization of these phosphates, showing that the nephelite-apatite may serve also as a K carrier. The efficiency of the new methods is compared with that of the old methods for obtaining available phosphates commercially. J. S. Joffe

ASH-51A METALLURGICAL LITERATURE CLASSIFICATION

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An investigation of the problem of the chemical technology of fertilizers. S. I. Vozzovskiy. J. Chem. Ind. (Moscow) 1933, No. 1, 22 G. - A survey of present trends in the fertilizer industry. H. M. LUKATEL

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<p>           New sources and methods for producing boron com-            pounds. S. I. Volkovich. J. Chem. Ind. (Moscow)            1933, No. 10, 56-7.—Datolite is ignited at 800-850°, then            mixed with <math>H_2SO_4</math> for 30 min. at 80°. The concd. ext.,            filtered from <math>CaSO_4</math>, is boiled with <math>CaCO_3</math> to remove            heavy metals, and further concd. to yield <math>H_4BO_4</math>.            H. M. Leicester         </p>																																																			
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Gypsum and phosphogypsum. S. I. Vol'kovich.  
*Trans. Sci. Inst. Fertilizers (Leningrad) No. 101, 5-11*  
 (1933).—A discussion of the methods used in obtaining  
 $H_2SO_4$ ,  $(NH_4)_2SO_4$ , and cement base from native gypsum  
 and gypsum as a by-product of acid phosphate manuf.,  
 known as phosphogypsum. J. S. Joffe

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<p><b>VOL'FKOVICH, S.I.</b></p> <p><i>CA</i></p> <p><b>Experiments on the production of sulfur trioxide and cement from phosphogypsum.</b> S. I. Vol'fkovich and A. I. Loginova. <i>Trans. Sci. Inst. Fertilizers</i> (U. S. S. R.) No. 101, 113-22(1963).—Phosphogypsum, the residue from acid phosphate manuf., when treated with C at 1180° for 1 hr., gave a yield of 87-88.5% of H<sub>2</sub>SO<sub>4</sub>. Addns. of SO<sub>2</sub> and Fe<sub>2</sub>O<sub>3</sub> as a catalyst increased the rate of decompn. Phosphogypsum gave a higher yield of H<sub>2</sub>SO<sub>4</sub> than native gypsum. The slag obtained could be used in the manuf. of cement, providing the proper addns. of clay are made.</p> <p>j. S. Joffe</p>																																																			
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<p>CA VOL'KOVICH, S. I.</p> <p>PROCESSES AND PROPERTIES INDEX</p> <p>15</p> <p>Fertilizers. S. I. Vol'kovich, S. S. Dragunov and A. N. Rosnovskaya: <i>Russ.</i> 30, 783, Nov. 30, 1931. Brown coal, peat, etc., are treated with <math>\text{NH}_3</math> under pressure and the uncombined <math>\text{NH}_3</math> is neutralized, e. g., with <math>\text{H}_3\text{PO}_4</math>.</p> <p>AS-35A METALLURGICAL LITERATURE CLASSIFICATION</p>																																																			
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<p>EA</p> <p>VOL'FROVICH, S.I.</p> <p>Ammonium phosphates. Nauchn. Institut Udo-                      renil i Insektovugolodov (S. I. Vol'frovič, inventor).                      Russ. 40,906, Jan. 31, 1935. <i>Khim. us. Russ.</i> 13,247                      (preceding abstr.). In the prepa. of <math>\text{NH}_4</math> phosphates                      from <math>\text{H}_2\text{PO}_4</math> and <math>\text{NH}_4\text{OH}</math> (in two stages), the treatment is                      carried to pH 2.5-3, pptd. salts of Fe and Al are removed,                      the soln. is concd. and <math>\text{NH}_3</math> is added until <math>(\text{NH}_4)_2\text{HPO}_4</math>                      is obtained.</p>																			
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VOL'FKOVICH, S. I.

Plastic masses from low grade coal. S. I. Vol'fkovich. *Novosti Tekhniki, Sverdlovsk Guberniya, Prilozhenie* 1935, No. 3, 3. A soft coal from the Moscow district was treated at 0.8 atm. with  $\text{NH}_3$ .  $(\text{NH}_4)_2\text{CO}_3$  distill. oil on dry distn. of the product and the plastic masses thus prepd. were completely sol. in  $\text{H}_2\text{O}$ . The product contains up to 20% of N; it may be used as *fertilizer*. It may be partially neutralized with  $\text{H}_2\text{O}$  to prep. valuable nitrogen-phosphate organic compds. A. A. B.

ASIA SLA METALLURGICAL LITERATURE CLASSIFICATION

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<p>The preparation of ammonium sulfate-ammonium nitrate mixtures by oxidation of ammonium sulfite with oxides of nitrogen or nitric acid. S. Vol'kovich, A. Dubovitzkii and N. Kryuchkov. <i>J. Chem. Ind. (Moscow)</i> 12, 486-94 (1935).—When <math>(\text{NH}_4)_2\text{SO}_3</math> is treated with NO contg. 2.7% <math>\text{NO}_2</math>, slow oxidation occurs until the soln. becomes acid. The temp. then rises sharply, and oxidation is completed. The rate of oxidation is increased by increasing concns. of <math>\text{NO}_2</math> in the gas and of <math>(\text{NH}_4)_2\text{SO}_3</math> in the soln. Both rate and degree of oxidation increase with increased ratio of <math>\text{O}_2</math> to <math>\text{NO}_2</math>. The product contains both <math>(\text{NH}_4)_2\text{SO}_4</math> and <math>\text{NH}_4\text{NO}_3</math> as well as some <math>\text{NH}_4\text{HSO}_4</math>, which must be neutralized by <math>\text{NH}_3</math>. The oxidation can also be performed by adding the sulfite soln. to <math>\text{HNO}_3</math>. To get the fertilizer <math>(\text{NH}_4)_2\text{SO}_4 \cdot 2\text{NH}_4\text{NO}_3</math>, a ratio of <math>\text{HNO}_3</math> to <math>\text{SO}_3</math> of 2.7-3.0 must be used. The optimum temp. for both methods is 42-5°. There is almost no loss of N, but some <math>\text{NH}_3</math> and <math>\text{SO}_2</math> and much NO are evolved during the reaction. These can be recovered and used again.</p> <p>H. M. Leicester</p>																																																																																																							
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BC		<p>Production of concentrated fertilizers from poor phosphates. E. Bekman and S. Yegorov (Chem. Eng. Cong. World Power Conf., 1954, Z11, 16 pp.).-- The manufacture in U.R.S.S. of fertilizers from low-grade phosphorites and apatite-nepheline minerals is discussed, the processes employed being those of mechanical comminution, by calcination and flotation, treatment with mineral acids, and electrothermal or blast-furnace reduction to P, followed by oxidation and hydration. The production of mixed fertilizers containing P and N and the enriching of metallurgical slags are also described.</p>		L. C. M.																																																																																																																																																																																																																																																																																																													
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**VOL'KOVICH, S. I.**

**Fertilizers.** S. I. Vol'kovich and I. A. Mirkin. Russ. 10,040, May 31, 1936. Salts of nitrates are treated with acidic carbonaceous substances, such as org. acids, acidic peat or CO<sub>2</sub>.

ASTM A 214 METALLURGICAL LITERATURE CLASSIFICATION



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The decomposition of phosphate by nitric acid. S. I.  
Vol'kovich. J. Chem. Ind. (U. S. S. R.) 14, 720 K  
(1937).—Recent Russian work is reviewed.  
H. M. Leicester

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PROCESSED AND REPRODUCTION

Research work in the fertilizer industry during the Second Five-Year Plan, and its perspectives during the third Five-Year Plan. A. J. Volynskiy (Bull. Acad. Sci. U.S.S.R. Div. Chem., 1955, No. 1, p. 22-25).—A review. (J. Russ. Chem. Soc., 1955, No. 1, p. 22-25).

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<p><b>VOL'FKOVICH, S.</b></p> <p>The decomposition of phosphates with nitric acid. S. I. Vol'fkovich, A. I. Loginova and A. M. Polyak. <i>Bull. Acad. sci. U. R. S. S., Classe sci. math. nat., Sér. chim.</i> 1938, No. 1, 101-9.—(a) Flotation apatite is decompd. with 55% HNO<sub>3</sub> in the presence of 17% soln. of NaNO<sub>3</sub> to ppt. H<sub>2</sub>SiF<sub>6</sub> as Na<sub>2</sub>SiF<sub>6</sub>. The solid residue is sepd. from the soln., washed, and used as an insecticide (contg. 42% of Na<sub>2</sub>SiF<sub>6</sub>). The soln. is pptd. by adding finely powdered CaO in 2 steps: (1) pptn. of phosphates of rare earth elements, which then are sepd. from the soln. and (2) pptn. of CaHPO<sub>4</sub>, which is filtered out, washed and dried. The soln. of Ca(NO<sub>3</sub>)<sub>2</sub> is evapd. down for the prepn. of fertilizer, or treated with (NH<sub>4</sub>)<sub>2</sub>CO<sub>3</sub> yielding NH<sub>4</sub>NO<sub>3</sub>. (b) Flotation apatite is treated as in (a) (with 55% HNO<sub>3</sub>). The soln. is treated with NH<sub>3</sub> to pH 2-2.5 to ppt. rare earth elements, and after sepn. from ppts. it is treated with (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> yielding CaSO<sub>4</sub>·2H<sub>2</sub>O, which is sepd. from the soln. Then the soln. is treated with NH<sub>3</sub> till NH<sub>4</sub>H<sub>2</sub>PO<sub>4</sub> appears. The hot suspension of the latter is treated with NH<sub>4</sub>NO<sub>3</sub>. The NH<sub>4</sub>H<sub>2</sub>PO<sub>4</sub> ppt. is filtered out and, without washing, is mixed with KCl, after which the mixt. is granulated. The NH<sub>4</sub>NO<sub>3</sub> soln., contg. 65% of salt, is evapd. down and used for the production of finished product or recycled for salting out of NH<sub>4</sub>H<sub>2</sub>PO<sub>4</sub>. A. A. P.</p>																																																																																																																																																											
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VOL'KOVICH, S. I.		198	
<p>Khibin apatite. S. I. Vol'kovich, M. P. Fivog and L. H. Berlin. <i>Nauch. Tr. Leningradsk. Gos. Univ.</i> 1919-39, 17: 24 (1939); <i>Khim. Referat. Yu. V. Samoilova</i> 1919-39, 17: 24 (1939); <i>Khim. Referat. Zhur.</i> 1940, No. 6, 80. -- The Khibin apatite deposits are described. The deposits contain 2 billion tons of apatite-petroleum minerals. The av. <math>P_2O_5</math> content is approx. 21%. Approx. 1/3 of the deposits contain 30% <math>P_2O_5</math>. The output of the mine is 4.2 million tons of ore annually. The enriched flotation apatite concentrate contains 39.2% <math>P_2O_5</math>. Nephelite, a waste product obtained in enriching the apatite, is utilized. The nephelite concentrate contains <math>Al_2O_3</math> up to 20, <math>K_2O</math> 5-6, <math>Na_2O</math> 12-13 and <math>P_2O_5</math> 2.0-2.5%. The output of nephelite is 200,000 tons. The utilization of the apatite-nephelite minerals (in the Ukpov mountains) is a characteristic example of the complex utilization of raw material. Apatite yields P, F and rare earths. <math>Al_2O_3</math>, a mixt. of potash and soda, and cement can be obtained by treating nephelite. The reserves of the apatite beds contain ore bodies high in sphen. Enriching the sphenite ore produces a concentrate rich in TiO<sub>2</sub>.</p> <p>W. R. Henn</p>			
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VOLOKHOVICH, S. I.

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Treating phosphates with nitric acid. S. I. Volkhovich and A. I. Loginova. *Nauka Inst. Udobreniy* 1940, 40-8(1939); *Akim. Inzh. Zhur.* 1940, No. 6, 87-8; cf. C. A. 35, 4144. In the treatment of natural phosphates with  $\text{HNO}_3$  to produce fertilizers contg. N and P, the main reaction is  $\text{Ca}_3(\text{PO}_4)_2 + 10\text{HNO}_3 = 5\text{Ca}(\text{NO}_3)_2 + 3\text{H}_2\text{PO}_4 + \text{H}_2\text{F}$ . F is sepd. in the form of  $\text{Na}_2\text{SiF}_6$  or  $\text{K}_2\text{SiF}_6$  by adding sol. salts of Na or K to the ext. Compls. of the rare earths of the Ce group are pptd. at the beginning of the process. F and these rare earth compls. are valuable by-products. For subsequent treatment of the ext. the following 2 methods gave best results. (1) Treat the ext. with lime or ground limestone, producing  $\text{K}_2\text{HPO}_4$  in the solid phase and  $\text{Ca}(\text{NO}_3)_2$  in the soln. Filter and evap. A ppt. is obtained contg. 43% of assimilable  $\text{P}_2\text{O}_5$  and  $\text{Ca}(\text{NO}_3)_2$ . The method is simple, but the product is hygroscopic. (2) Sep. the rare earths from the ext., add  $(\text{NH}_4)_3\text{PO}_4$  and  $\text{NH}_3$ .  $\text{CaSO}_4$  seps. in the solid phase and the soln. contains  $(\text{NH}_4)_3\text{PO}_4$  and  $\text{NH}_4\text{NO}_3$ , which can be obtained as a mixt. by filtering and evap. the soln. or separately by utilizing the decrease of the soly. of  $(\text{NH}_4)_3\text{PO}_4$  with the increase of the concn. of  $\text{NH}_4\text{NO}_3$ . This method is the more complex technologically. W. R. Henn

Inst. Insect. Fung. im. Sarnoylov - U-237/49, 8 Apr. 49

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<p>VOL'F KOVICH, S. I.</p> <p>ca</p> <p>The removal of rare earths from Khibin apatite. S. I. Vol'kovich and A. I. Logunova. <i>J. Chem. Ind. (U.S.S.R.)</i> 16, No. 12, 325 (1970). See C. A. 34, 31971. H. M. Leicester</p> <p>18</p> <p>ASB-SLR METALLURGICAL LITERATURE CLASSIFICATION</p>																																																			